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ABSTRACT

This paper identifies and describes the categories of electronic publications (EPs) in a document-based communication and information system called JIMMY, developed by Queen Margaret College (Edinburgh, Scotland) for use by students and staff in general arts and paramedical courses. The use of computer-mediated communication systems like bulletin boards, electronic mail, and post-coordinate boolean retrieval technologies is discussed, together with user behavior and attitudes toward the system's adoption. A user requirements survey determined that principal categories of EPs that should be displayed included past examination papers, syllabus material, abstracts of articles, timetables, and assignment specifications. Survey reports from 12-month operational trials indicate that from 14 categories of EPs identified for use, course syllabus information was the most popular for viewing on video display screens, with bulletin board interfaces showing preference over post-coordinate boolean retrieval methods. Possible enhancements to the system are listed as well as the main criticisms. It is noted that the system not only proved to be an academic awareness tool, but that it also became a valuable educational resource and teaching tool. (GLR)

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Categories of electronic publications in a college information system

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Running head: Categories of EPs in a college information system.

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Abstract

This paper identifies and describes the categories of electronic publications (EPs) in a college's document-based communication and information system used by students and staff on arts and paramedical courses. The use of computer-mediated communication (CMC) systems like bulletin boards, email and post-coordinate boolean retrieval technologies are discussed, together with user behaviour and attitudes to the system's adoption. Data from 12 month operational trials indicated that from N=14 categories of EPs identified for use, course syllabi information was the most popular for viewing on VDU screens, with bulletin board interfaces showing preference over post-coordinate retrieval methods.

Categories of electronic publications (EPs) in a college information system

1. JIMMY - a prototype college information system

Between 1987 and 1989 Queen Margaret College (QMC), Edinburgh, developed a communication and information system on a DEC VAX minicomputer for use by general arts and paramedical students and staff. The system used the VMS operating system and supported 48 simultaneous terminal lines switchable to 120 datapoints throughout campus using bulletin boards, electronic mail and document retrieval facilities as the medium. [1] Teaching at QMC is seen as communicative with the structure of the information system built round a series of menu hierarchies, each developed for a department's own use. In general, JIMMY provides access to a library of over 900 electronic publications covering a variety of document categories as initially defined by a user requirements questionnaire circulated throughout all academic departments. Two main methods of document retrieval were developed for access to documents (EPs): a) bulletin boards - where access to information was generally gained via a single key press; and b) post-coordinate boolean retrieval - where access was gained by searching and referring to the name, title or detail of a document in the document index to view the document on a VDU screen.

2. Users' categories of EPs identified for use

To determine the initial categories of information that should be stored in the system a user requirements survey was conducted at the early stages of development. In this 10% of the

College VAX user population (60 students and staff) were asked to rank in ascending order, the categories of EPs the system should contain (figure 1).

Categories (Total 1,2,3's)	1,	2,	3,	Total	Weighted Mean
Course documents	**12**	**4**	**6**	**22**	**0.83**
Course bibliographies	3	4	3	10	0.33
Annual reports	1	1	0	2	0.08
Past exam papers	**17**	**15**	**8**	**40**	**1.48**
Committee papers	0	2	1	3	0.08
Statistics	0	1	1	2	0.05
Timetables	1	6	6	13	0.35
Class lists	10	2	3	15	0.61
Circulars	0	0	1	1	0.01
Newsletters	1	3	11	15	0.33
Abstracts of articles	10	7	5	22	0.81
Assignments	3	8	11	22	0.60
Distance learning materials	1	1	0	2	0.08
Other	1	0	0	1	0.05

Figure 1: Categories of EPs ranked in priority order

As a result of the user requirements survey it was apparent that past examination papers, course related documents (syllabus material), abstracts of articles, timetables and assignment specifications were the principal categories of EPs that should be displayed. Subsequently, all departments were canvassed for this information to be made available in electronic form so that it could be uploaded into the system. By the end of 1989, some 600 documents were stored in JIMMY and this was increased to 900 a year later. Once the system was fully operational EPs were formally categorised according to fourteen specific forms (figure 2) and

were indexed in the database accordingly.

```
ABS  - abstracts, periodicals, books and articles
BIB  - lists of bibliographies
BOOK - reference (ISBN) to books
DATE - term events and dates
DIS  - electronic mail distribution lists
EXAM - past examination papers
HAND - lecture handouts
HINT - college and public services facilities guides
KEY  - information technology 'key' information
MIN  - minutes of meetings
SYLL - course documents and curriculum information
SPEC - assignment specifications
TIME - timetables
VID  - reviews of videos
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Figure 2: Categories of EPs formally defined

3. JIMMY's usage statistics and user satisfaction surveys

A prime reason for developing JIMMY was to identify the organisation and use of EPs in a college information system including: a) preferred methods of retrieval and b) categories of information applicable to different usergroups within the College. [2]

3.1 The hypothesis

It was anticipated that bulletin board retrieval would be the preferred method of access to electronic information and that different departments and usergroups would organise their EPs differently, depending on the degree of integration within courses and exploits of key information providers from staff. To investigate this several research methods were used to determine user behaviour and attitudes:

a) the automatic logging of data about user behaviour in accessing JIMMY functions, including facilities access, and retrieval of specific categories of documents;

b) the logging of responses to an electronic questionnaire designed to identify users' satisfaction towards the use of the system;

c) the ad hoc collection of electronic mail suggestions to determine informal user satisfaction and behavioral responses to the systems adoption.

3.2 The logging and processing of data

The collection of data for usage of the system was done electronically using the VMS operating system for tracking navigation patterns and recording access to all JIMMY facilities including: a) departmental bulletin boards **JimBBS**; b) indexed post-coordinate boolean retrieval facility **JimLEX**; c) spellchecker **JimDICT**; d) help screens **JimHELP**; e) VMS operating systems commands **JimCOMM**; f) details of additional software **JimVAX**; f) how to view documents directly via known keywords **JimKEY** or known document name **JimTYPE**; and g) exit from the system. Findings showed that between October 1988 to June 1989 total logins was 4582 (504 hours in the system) for thirty usergroups (figure 3) - an average of 509 logins per month.

```
AC1 - 1st year BA Applied Consumer Studies
AC2 - 2nd year BA Applied Consumer Studies
CS1 - 1st year BA Communication Studies
CS2 - 2nd year BA Communication Studies
CS3 - 3rd year BA Communication Studies
DN1 - 1st year District Nursing Certificate
DT2 - 2nd year BSc Dietetics
GEN - General Username on VAX (no password)
HD2 - 2nd year HND Hotel Catering/Institutional Management
HD3 - 3rd year HND Hotel Catering/Institutional Management
HS1 - 1st year Health Studies Certificate
HV1 - 1st year Diploma Health Visiting
FS1 - 1st year BSc Food Studies
IS1 - 1st year HND Information Studies
IS2 - 2nd year Information Studies
LBMAI Library General Username
MH1 - 1st year Diploma Community Mental Health
NU1 - 1st year BA Nursing Studies
NU2 - 2nd year BA Nursing Studies
NU3 - 3rd year BA Nursing Studies
OT2 - 2nd year Occupational Therapy
OPS - System's Operators
PH1 - 1st year BSc Physiotherapy
PH2 - 2nd year BSc Physiotherapy
PH3 - 3rd year BSc Physiotherapy
Staff Members' Usergroup
QMCSA Students' Association
SCF - Science Festival Usergroup
SP1 - 1st year BSc Speech Therapy/Pathology
SP3 - 3rd year BSc Speech Therapy/Pathology
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Figure 3: JIMMY's list of usergroups

3.2.1 Total facilities accessed in JIMMY

Facilities accessed included access to all JIMMY facilities especially the two main methods for document retrieval **JimBBS** and **JimLEX**. Total facilities accessed was 7548 with bulletin

board retrieval obtaining 5035 accesses (65.5% of total accesses to all facilities), and with the post-coordinate facility obtaining 727 accesses (figure 4).

FACILITY	ACCESSES
JimBBS	5035
JimLEX	727
JimDICT	376
JimCOMM	559
JimHELP	232
JimKEY	177
JimTYPE	148
JimVAX	204
TOTAL	7458

Figure 4: Total facilities accessed in JIMMY 1988-1989

Total documents retrieved via the bulletin boards was 3720, though retrieval tended to fluctuate and reflected the expected decline at vacation periods. As suspected the number of documents retrieved varied according to the academic discipline. For example, Communication Studies 1 (CS1) and Information Studies 1 (IS1) accounted for almost one third (1168) of all documents retrieved via JimBBS (figure 5). Other courses showed minimal retrieval scores, e.g. HND Hotel Catering and Institutional Management (HD2).

Some paramedical courses, however, e.g. BA degree in Nursing Studies (NU1) achieved high scores in retrieval of EPs, which was significant given that they were not traditional computer users and indicated the degree of integration of EPs in healthcare curricula. [3]

USERGROUP	DOCUMENTS	USERGROUP	DOCUMENTS
AC1	117	LBMAI	12
AC2	210	MH1	126
CS1	741	NU1	540
CS2	66	NU2	249
CS3	177	NU3	158
DN1	30	OPS	23
DT2	27	OT2	41
GEN	107	PH1	39
HS1	7	PH2	229
HV1	140	PH3	34
HD2	2	STAFF	643
HD3	0	QMCSA	5
FS1	0	SCF	5
IS1	427	SP1	31
IS2	53	SP3	11
		TOTAL	3720

Figure 5: Documents retrieved via JimBBS by usergroup 1988/89

3.2.2 Total document categories retrieved via the bulletin boards

Each document as it was added to JIMMY was given a consecutive alphanumeric code of the type J0012.DOC and was indexed in JimLEX according to its form. Of the document categories identified by the usage data the SYLLABUS category (curriculum and course

information) proved to be the most popular for viewing on VDU screens. Out of a total of 3720 documents retrieved via JimBBS 2302 (62%) were of syllabus category (figure 6).

Usergroup	ABS	BIB	BOOK	DATE	DIS	EXAM	HAND	HINT	KEY	MIN	SYLL	SPEC	TIME	VID	TOTAL
AC1										1	16				17
AC2		1								2	7				10
CS1	8	1	17	2		157					343	169	44		741
CS2	2	1				39					18	4	2		66
CS3	5		1	2		16		1			147	3	2		177
DN1				3							27				30
DT2		5									22				27
GEN			2	10		23				1	60	6	5		107
HS1											6	1			7
HV1				6						3	122	1	8		140
HD2											2				2
HD3															
FS1															
IS1	1	4	58	8		27					287	13	29		427
IS2			1			3					44		5		53
LBMAIL		2		7							3				12
MH1		2	7	21		10					79	1	6		126
NU1		1		54		148				1	280	42	14		540
NU2			1	30		44					149	23	2		249
NU3	1			25		5					118	8	1		158
OPS	2		1	1							19				23
OT2			1			5					25	6	4		41
PH1				1		16					14	4	4		39
PH2		1		5							9	8	6		29
PH3						3					1				4
STAFF	4	3	4	48		16					465	79	24		643
QMCSA										1	4				5
SCF						5									5
SP1											29	2			31
SP3											6		5		11
TOTAL	23	21	93	223	0	517	0	1	0	9	**2302**	370	161	0	3720

Figure 6: Total categories of documents retrieved via JimBBS by usergroup 1988/89

One of the main reasons for the success of the syllabus category was because, of the documents made available for JIMMY, which never remained static and fluctuated over time, the syllabus category was one of the most (second only to Abstracts) submitted for storage and display. For example, in November 1989 documents were stored in the database in the proportions shown in figure 7.

ABS 33%	KEY 8%
BIB 6%	MIN 1%
BOOK 0.2%	**SYLL 14.5 %**
DATE 2%	SPEC 4%
DIS 6%	TIME 1%
EXAM 10%	VID 5%
HAND 7%	HINT 4.5%

Figure 7: Proportions of documents stored in JIMMY

Research showed from the automatic logging of data that course documents and syllabus information were by far the principal kinds of EPs that the system should store for retrieval. It was also found that the use of bulletin boards was the preferred method of access to information.

3.3 Electronic JIMMY satisfaction survey

To investigate user satisfaction attitudes to the adoption of the information system, a program written in VAX Digital Control Langauge (running an electronic questionnaire consisting of

five short questions) was appended to JIMMY's EXIT routine. This was an optional feature allowing the user to complete it once without having to respond to it at every single logout. The questions were constructed to reflect the facilities users accessed and found difficult within the system; what method of retrieval they preferred when accessing EPs; how satisfactory they found the hard copy JIMMY userguide; and to determine how beneficial they found the system in general.

3.3.1 Results of satisfaction survey

User satisfaction proved to be favourable, with data indicating that most of the problems encountered occurred at the beginning of the adoption of the system as proficiency increased with more use. Significantly, results may have indicated a perceptual problem about the nature of bulletin board retrieval. Though it was not clear what percentage of the sample misunderstood question 4 of the questionnaire (figure 8), it is probable that some respondents may not have known the technical relationship between key presses selecting an option on a bulletin board and the document displayed (even though this was explained to them in workshops and in the userguide).

QUESTION 4 Which method in JIMMY did you use to retrieve documents?

1. JimBBS (bulletin boards)	24
2. JimLEX (indexed retrieval)	8
3. Didn't retrieve any documents	56

Figure 8: Question 4 from questionnaire

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3.4 Collection and analysis of electronic mail suggestions

In addition to the questionnaire (3.3) users were prompted to send more detailed ad hoc suggestions and comments to the research personnel. These messages, once received, were held in a special mail folder to be kept for collation and analysis. Over 250 messages were collected from a variety of sources which were used to determine informal user satisfaction and behavioral responses. Suggestions fell into three categories: 1) satisfied comments; 2) possible enhancements to the system; and 3) main criticisms of the system.

3.4.1 Satisfied comments

These generally emphasised support and praise for the system's implementation (figure 9). Though the number of these were minimal, in comparison with the other two categories, it was assumed that users tended to send mail suggestions because they were unhappy with the system rather than to congratulate the system's designers.

> 'JIMMY is a very useful system. It gives access to everything going on in the College very easily, both past and present. It's clear and concise with an easy to use index and help facility. The use of abbreviations help shorten the process of selecting bulletin boards, and speeds up the time to retrieve information.'

Figure 9: Typical email supportive comment

3.4.2 Possible enhancements to the system

These fell into two categories a) informational and b) technical. By far the most suggestions received indicated that the system should contain more information on the following topics:

financial matters for students; consumer affairs; careers; college calendar; lecturers' timetables; model answered exam papers; IT software; and library new editions list. Technical aspects included: more user friendly prompts (numbers not words); improved dictionary; simpler search criteria and more colourful displays.

3.4.3 Main criticisms of the system

Criticisms could be generally categorised as follows: a) documents too difficult to print out; b) JimLEX too complicated; c) response time delays; and d) information out of date. Of all the criticisms it was already suspected that users were unhappy with the post-coordinate retrieval facility, but what was surprising was the problems related to printing out documents. There seemed to be more need for this facility than was originally anticipated. It was also discovered that the demand for EPs out-weighed the supply, and that there was a requirement to ensure that information was kept up-to-date and for lapsed documents to be removed from the system.

4. Conclusion on College research findings

There are a number of implications for the delivery and quality of EPs in a college information system as revealed by the research at QMC. [2] But an important aspect concerns the use of JIMMY as a prototype for a more fully developed campus-oriented model. Significantly, the use of bulletin boards as an interface for retrieving information in an educational context has been established with the possible principal categories of information identified for use by arts and paramedic students. JIMMY proved to be much more than an academic awareness system, it also became a valuable educational resource and teaching tool.

Further research, however, is needed to address other technical (e.g. client server network as the technological platform) and pedagogic issues raised by the use of EPs in a college information system. [4]

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